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Reply to: 3460 Technical Assistance

Date: July 21, 1982

Subject: 1982 Aerial Detection Survey of Forest Pest Damage -  
Allegheny National Forest

To: Forest Supervisor  
Allegheny National Forest

From June 21 through 23, Bob Acciavatti of my staff conducted an aerial detection survey over your Forest for forest pest damage. Porter Gearhart of your TM staff accompanied Bob during the flying, provided the communications link to the Forest and gave valuable ground support, just as he had on an earlier visit Bob made on May 25 and 26. We appreciate Porter giving his time and experience to these FPM activities.

This memo provides you with the survey procedures and results, and recommendations for action to prevent or reduce the damage observed. Results are presented in narrative form with tabulations and accompanying maps for all lands within the Forest purchase boundary. We have taken the liberty to send each District Ranger a copy of this memo with a map specifically indicating what damage we observed on his District. This should expedite the flow of information to the user and any followup action we might need to take. Any District wanting to field check our maps for host and damage extent, should do so and contact us directly if questions arise.

First, a word about our procedures and reporting system. Aerial detection surveys for forest pest damage provide a very inexpensive and fast means of sampling the general status of forest insects, primarily. When surveys are conducted annually over the same area at the same time and in the same manner, general infestation trends can be established which alert us to outbreaks which can potentially impact on the forest resource. Current tree damage observed aerially is broadly categorized by out-right mortality and defoliation. Defoliation, in turn, is classed by intensity and frequency of occurrence. Thus, moderate defoliation is partial removal of foliage while heavy is almost complete removal. Furthermore, each intensity can appear scattered because the host occurs only infrequently in a forest stand, or it can appear widespread because a forest stand is almost purely one host species; the frequent category is intermediate between these two.

From our aerial survey, we found tree mortality to be concentrated in several specific areas on each District (refer to maps), but not specific to any particular tree species; spruce, hemlock, red and white pines and various hardwood species were affected. Several of these dead tree areas appeared to have resulted from fires or flooding. Salvage of merchantable-sized trees is recommended wherever feasible.

Defoliation by oak leafrollers and leaf tiers was the most serious damage observed. This occurred on about 21,040 acres as follows:



Defoliation	Ranger District				Combined Districts
	Bradford	Sheffield	Ridgway	Marienville	
Moderate scattered	1,040	2,360	120	680	4,200
Moderate frequent	1,320	0	80	0	1,400
Moderate widespread	0	0	0	0	0
Heavy scattered	320	3,640	0	7,160	11,120
Heavy frequent	0	2,080	120	2,120	4,320
Heavy widespread	0	0	0	0	0
Total	2,680	8,080	320	9,960	21,040

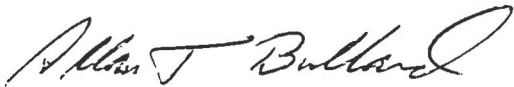
This outbreak represents an intensification and spread of the defoliation Porter reported last year. At that time, scattered oak trees were almost completely stripped of foliage on the Allegheny River slopes between Tidiouts and Buckaloons. Oak leafrollers and leaf tiers were suspected. On May 25 and 26, 1982, Porter and Bob traversed the oak type on the southwestern half of the Forest looking for the causes of the defoliation. Their observations indicated the oaks were being defoliated by a complex of insects (loopers, tent caterpillars, sawflies and chafer beetles) in addition to leaf tiers and leafrollers, but the latter type were most abundant.

Oak leafrollers and leaf tiers have caused defoliation over large areas of the Forest at various periods during the last two decades. The last outbreaks of these insects occurred in 1972-1974. During that period and afterward, mortality of red and white oak group trees occurred extensively on the Marienville and Sheffield Districts. Timber salvage sales were initiated there to try and recover some of the value of the dead and dying trees. We anticipate that if this current outbreak continues, it will have a similar effect on the oak type of these Districts.

We now know that tree mortality results from a sequence of events involving processes which are still not completely understood nor easy to predict. Two or more years of heavy defoliation usually causes a generally weakened tree condition because these trees deplete their root starch for the next growing season when they produce a second flush of summer foliage. The most obvious sign that a tree is low in vigor lies in its crown condition. Trees with extensive dead twigs and branches and heavy epicormic shoots along the main limbs and bole have low vigor to recover from defoliation and therefore represent a very high risk of dying. Loss of diameter growth also occurs, but is more difficult to assess. The low vigor trees often are subsequently attacked and killed by wood boring beetles and the shoestring root rot fungus, Armillariella mellea. This weak pathogen is commonly found growing free in the soil. When it encounters the suitable substrate of the cortical region in a weakened tree, it produces copious mycelial fans which extend to and beyond the root collar, effectively girdling the host.

The key to preventing tree mortality then lies with breaking the sequence by reducing the effect of defoliation. This can be done by preventing heavy defoliation in the short term with aerial application of insecticides or in the long term by increasing tree vigor through silvicultural practices which change tree type, size and density. Currently, the short-term solution has proven to be the most effective, best understood and most commonly used. Unfortunately, the economic value of the resource threatened often cannot support a costly spray project. Therefore, the Forest needs to consider implementation of proven silvicultural practices which will maintain the oak type in both a healthy condition and as an entity in the long term.

Forest insect suppression/prevention should be limited to highly-productive stands on the best sites within the outbreak area. We can evaluate the pest damage already done in these stands, the likely course of the outbreak and provide you with pest management alternatives; if you desire, just let us know. Likewise, if you have specific questions on our survey results, please contact us.



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Field Representative  
Forest Pest Management

Enclosures

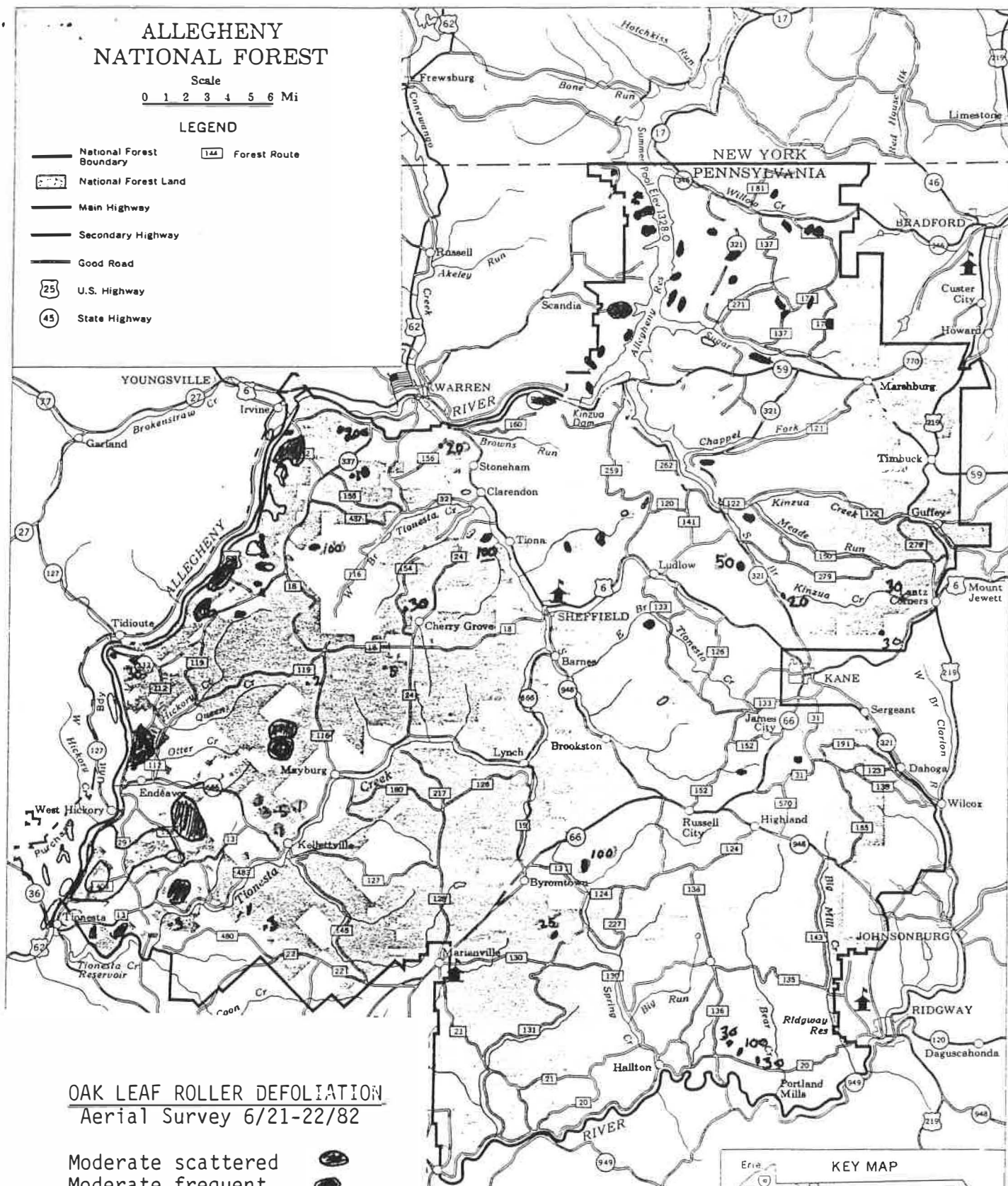
cc: AO  
Bradford RD  
Marienville RD  
Ridgway RD  
Sheffield RD

# ALLEGHENY NATIONAL FOREST

Scale  
0 1 2 3 4 5 6 Mi

## LEGEND

- National Forest Boundary
- ▨ National Forest Land
- Main Highway
- Secondary Highway
- Good Road
- 25 U.S. Highway
- 45 State Highway
- 144 Forest Route



## OAK LEAF ROLLER DEFOLIATION Aerial Survey 6/21-22/82

Moderate scattered  
Moderate frequent  
Moderate widespread  
Heavy scattered  
Heavy frequent  
Heavy widespread



## TREE MORTALITY

Hemlock/Spruce 1/030  
White or Red Pine 1/030  
Hardwood 1/030

